Claims

1. A method of variable length coding a set of data symbols comprising a certain first number of data symbols having a first value and a certain second

5   number of data symbols having values other than said first value, wherein at least one characteristic of the variable length coding applied to the data symbols is adapted according to said certain second number of data symbols which have values other than the first value.

10   2. A method according to claim 1, wherein said first value is zero, such that said set of data symbols comprises a certain first number of zero-valued data symbols and a certain second number of non-zero-valued data symbols.

3. A method according to claim 2, comprising the steps of:

15   -   representing each of said certain first number of non-zero-valued data symbols by a pair of values comprising a first value indicative of the value of said non-zero-valued data symbol and a second value indicative of a number of zero-valued data symbols preceding or following said non-zero-valued data symbol to form a set of pairs of first and second values

20   representative of the set of data symbols;

     -    performing a mapping operation in which each pair of said set of pairs of first and second values is assigned to a codeword thereby forming a set of encoded values representative of the set of data symbols, the codeword being selected from a set of codewords, said set of codewords

25   having been designed to provide a reduction in an amount of information required to represent said set of data symbols when used in said mapping operation.

4. A method according to claim 3, wherein said mapping operation is

30   dependent on said number of non-zero-valued data symbols in said set of data symbols.

5. A method according to claim 3, wherein said mapping operation is performed by means of an assignment table which defines the assignment of pairs of first and second values to codewords.

5   6. A method according to claim 3, wherein said mapping operation is performed by selecting one of a set of selectable assignment tables, wherein each table of said set of selectable assignment tables defines an assignment of pairs of first and second values to codewords and assigning each of said pairs of first and second values to a codeword according to the assignment

10   defined by said selected assignment table.

7. A method according to claim 6, wherein an assignment table is selected in dependence on a characteristic of the set of data symbols.

15   8. A method according to claim 6, wherein an assignment table is selected in dependence on the number of non-zero-valued data symbols in said set of data symbols.

9. A method according to claim 1, wherein said set of data symbols is a set

20   of quantised transform coefficient values.

10.A method according to claim 9, wherein said first value of said pair of first and second values represents a value of non-zero-valued quantised transform coefficient and said second value of said pair of first and second

25   values represents a number of zero-valued quantised transform coefficients preceding said non-zero-valued quantised transform coefficient.

11.A method according to claim 1, performed in an encoding device.

30   12.A method according to claim 11, wherein the encoding device is a video encoder.

13. A method according to claim 1, further comprising the step of decoding said set of encoded values representative of the set of data symbols.

14. A method according to claim 13, wherein said step of decoding said set of encoded values comprises performing an inverse mapping operation in which each codeword forming said set of encoded values is used to identify a specific one of said set of pairs of first and second values.

15. A method according to claim 14, wherein said inverse mapping operation is dependent on said number of non-zero-valued data symbols in said set of data symbols.

16. A method according to claim 14, wherein said inverse mapping operation is performed by means of an assignment table which defines the assignment of pairs of first and second values to codewords.

17. A method according to claim 14, wherein said inverse mapping operation is performed by selecting one of a set of selectable assignment tables, wherein each table of said set of selectable assignment tables defines an assignment of pairs of first and second values to codewords and identifying a specific one of said set of pairs of first and second values according to the assignment defined by said selected assignment table.

18. A method according to claim 17, wherein a value indicative of said number of non-zero values in said set of data symbols is used in said step of decoding said set of encoded values to select one of said selectable assignment tables.

19. A method according to claim 17, wherein a value indicative of said number of zero-valued data symbols in said set of data symbols is used in said step of decoding said set of encoded values to select on of said selectable assignment tables.

20. A method according to claim 13, wherein said step of decoding said set of encoded values further comprises reconstructing said set of data symbols from said set of pairs of first and second values.

21. A method according to claim 13, wherein said step of decoding said set of encoded values is performed in a decoding device.

22. A method according to claim 21, wherein the decoding device is a video decoder.

23. A method according to claim 21, wherein said value indicative of said number of non-zero-valued data symbols in said set of data symbols is transmitted from said encoding device to said decoding device.

24. A method according to claim 21, wherein said value indicative of said number of zero-valued data symbols in said set of data symbols is transmitted from said encoding device to said decoding device.

25. An encoder for variable length coding a set of data symbols comprising a certain first number of data symbols having a first value and a certain second number of data symbols having values other than said first value, wherein the encoder is arranged to adapt at least one characteristic of the variable length coding applied to the data symbols according to said certain second number of data symbols which have values other than the first value.

26. An encoder according to claim 25, wherein said first value is zero, such that said set of data symbols comprises a certain first number of zero-valued data symbols and a certain second number of non-zero-valued data symbols and that the encoder is arranged to adapt at least one characteristic of the variable length coding applied to the data symbols according to the number of non-zero-valued data symbols in said set of data symbols.

27. An encoder according to claim 26, comprising:

- means for representing each of said certain first number of non-zero-valued data symbols by a pair of values comprising a first value indicative of the value of said non-zero-valued data symbol and a second value indicative of a number of zero-valued data symbols preceding or following said non-zero-valued data symbol to form a set of pairs of first and second values representative of the set of data symbols;

- means for performing a mapping operation in which each pair of said set of pairs of first and second values is assigned to a codeword thereby forming a set of encoded values representative of the set of data symbols, the codeword being selected from a set of codewords, said set of codewords having been designed to provide a reduction in an amount of information required to represent said set of data symbols when used in said mapping operation.

28. An encoder according to claim 27, wherein said mapping operation is arranged to be dependent on said number of non-zero-valued data symbols in said set of data symbols.

29. An encoder according to claim 27, wherein said mapping operation is arranged to be performed by means of an assignment table which defines the assignment of pairs of first and second values to codewords.

30. A method according to claim 27, wherein said mapping operation is arranged to be performed by selecting one of a set of selectable assignment tables, wherein each table of said set of selectable assignment tables defines an assignment of pairs of first and second values to codewords and assigning each of said pairs of first and second values to a codeword according to the assignment defined by said selected assignment table.

31. An encoder according to claim 30, wherein an assignment table is arranged to be selected in dependence on a characteristic of the set of data symbols.

32. An encoder according to claim 30, wherein an assignment table is arranged to selected in dependence on the number of non-zero-valued data symbols in said set of data symbols.

33. An encoder according to claim 25, provided in a video encoder.

34. An encoder according to claim 25, implemented as machine executable code stored on a computer readable storage medium.

35. A decoder for variable length decoding variable length codewords representing a set of data symbols, said set of data symbols comprising a certain first number of data symbols having a first value and a certain second number of data symbols having values other than said first value, wherein the decoder is arranged to adapt at least one characteristic of the variable length decoding applied to the variable length codewords according to an indication of the second number of data symbols in said set of data symbols.

36. A decoder according to claim 35, arranged to decode said variable length codewords by performing an inverse mapping operation in which each of said variable length codewords is used to identify a specific one of said set of pairs of first and second values.

37. A decoder according to claim 36, wherein said first value is zero, such that said set of data symbols comprises a certain first number of zero-valued data symbols and a certain second number of non-zero-valued data symbols and said inverse mapping operation is arranged to be dependent on said number of non-zero-valued data symbols in said set of data symbols.

38. A decoder according to claim 36, wherein said inverse mapping operation is arranged to be performed by means of an assignment table which defines the assignment of pairs of first and second values to codewords.

39. A decoder according to claim 36, wherein said inverse mapping operation is arranged to be performed by selecting one of a set of selectable assignment tables, wherein each table of said set of selectable assignment tables defines an assignment of pairs of first and second values to codewords and identifying a specific one of said set of pairs of first and second values according to the assignment defined by said selected assignment table.

40. A decoder according to claim 39, arranged to use a value indicative of said number of non-zero-valued data symbols in said set of data symbols to select one of said selectable assignment tables.

41. A decoder according to claim 39, arranged to use a value indicative of said number of zero-valued data symbols in said set of data symbols to select one of said selectable assignment tables.

42. A decoder according to claim 35, provided in a video decoder.

43. A decoder according to claim 35, implemented as machine executable code stored on a computer readable storage medium.